

THE CONVEX ENVELOPE OF A FUNCTION
BY PARABOLIC MONGE-AMPÈRE PROBLEM

A. Jarrray¹, A. Younes²§, S. Ghnimi³

^{1,2,3}FST, Campus Universitaire

2092 - El Manar, Tunis, TUNISIA

¹e-mail: abdennaceur.jarrray@gmail.com

²e-mail: younesanis@yahoo.fr

³e-mail: soumayaghnimi@yahoo.fr

Abstract: The evolution of a hyper-surface moving according to its normals with a speed proportional at the Gauss curvature, leads to a nonlinear parabolic problem of Monge-Ampère type. In one dimension we use the motion of a convex graph to approximate the convex envelope of a giving function. The existence and uniqueness of the problem and the numerical result are considered.

AMS Subject Classification: 35J96, 35K96

Key Words: Monge-Ampère equation, Gauss curvature, maximal-monotone operators, convex envelope

1. Introduction

The evolution of a hyper-surface, moving according to its normals with a speed proportional at the Gauss curvature on each point of the hyper-surface and in the direction of the outer normal vector, leads to the following nonlinear parabolic problem of Monge-Ampère type:

Received: March 30, 2011

© 2012 Academic Publications

§Correspondence author